

SYSTEM OPERATING CONTROLS

Master Station Controls

- ① **END CALL:** Ends intercom communication and returns system to audio source.
- ② **DOOR TALK:** Initiates intercom communication to the door speakers.
- ③ **INSIDE/PATIO:** Initiates intercom communication to remote stations.
- ④ **TIMER:** Enables or disables the radio timer. The indicator light will illuminate next to the timer button when the Radio timer is enabled.
- ⑤ **PROGRAM AUDIO SOURCE:** Selects the program audio source: AM, FM, CD/TAPE and AUX. The indicator light will illuminate next to the selected program audio source.
- ⑥ **PROGRAM OFF:** Turns off the selected program audio source. **NOTE:** The Program Off key does not affect the intercom operation.
- ⑦ **MASTER VOLUME:** Adjusts the volume at the master station.
- ⑧ **MEMORY 1-6 KEYS:** Provides direct access to stored radio frequencies.
- ⑨ **▲ ▼ UP/DOWN TUNING:** Provides manual tuning of the AM/FM radio.
- ⑩ **SCAN:** Activates scan tuning during AM/FM operation.
- ⑪ **DOOR RELEASE KNOCKOUT:** Mounting hole for optional door release push button.
- ⑫ **MICROPROCESSOR RESET:** Initiates a reset of the microprocessor. **NOTE:** A reset of the microprocessor will erase the system's memory.
- ⑬ **MEMORY SET:** Stores desired radio frequency into a selected memory location.
- ⑭ **TIME SET/HOUR/MIN:** Used when setting the timer and clock.
- ⑮ **TREBLE:** Adjusts the high frequency audio content of the source audio.
- ⑯ **BASS:** Adjusts the low frequency audio content of the source audio.
- ⑰ **SYSTEM VOLUME:** Adjusts the program audio level throughout the system.
- ⑱ **LOUDNESS:** Compensates for the loss of bass and treble response the human ear has when listening to audio at low volume levels.
- ⑲ **INTERCOM VOLUME:** Adjusts intercom audio level throughout the system.
- ⑳ **MASTER STATION STATUS SWITCH:** Sets the master station in one of the following modes: RADIO INTERCOM, INTERCOM ONLY, OFF or MONITOR.
- ㉑ **REMOTE STATION STATUS SWITCHES:** Sets the remote stations in one of the following modes: RADIO INTERCOM, INTERCOM ONLY, OFF or MONITOR.
- ㉒ **ELECTRONIC CHIME TUNE SELECTION:** Selects the tune of the optional IA-29 Electronic chime.

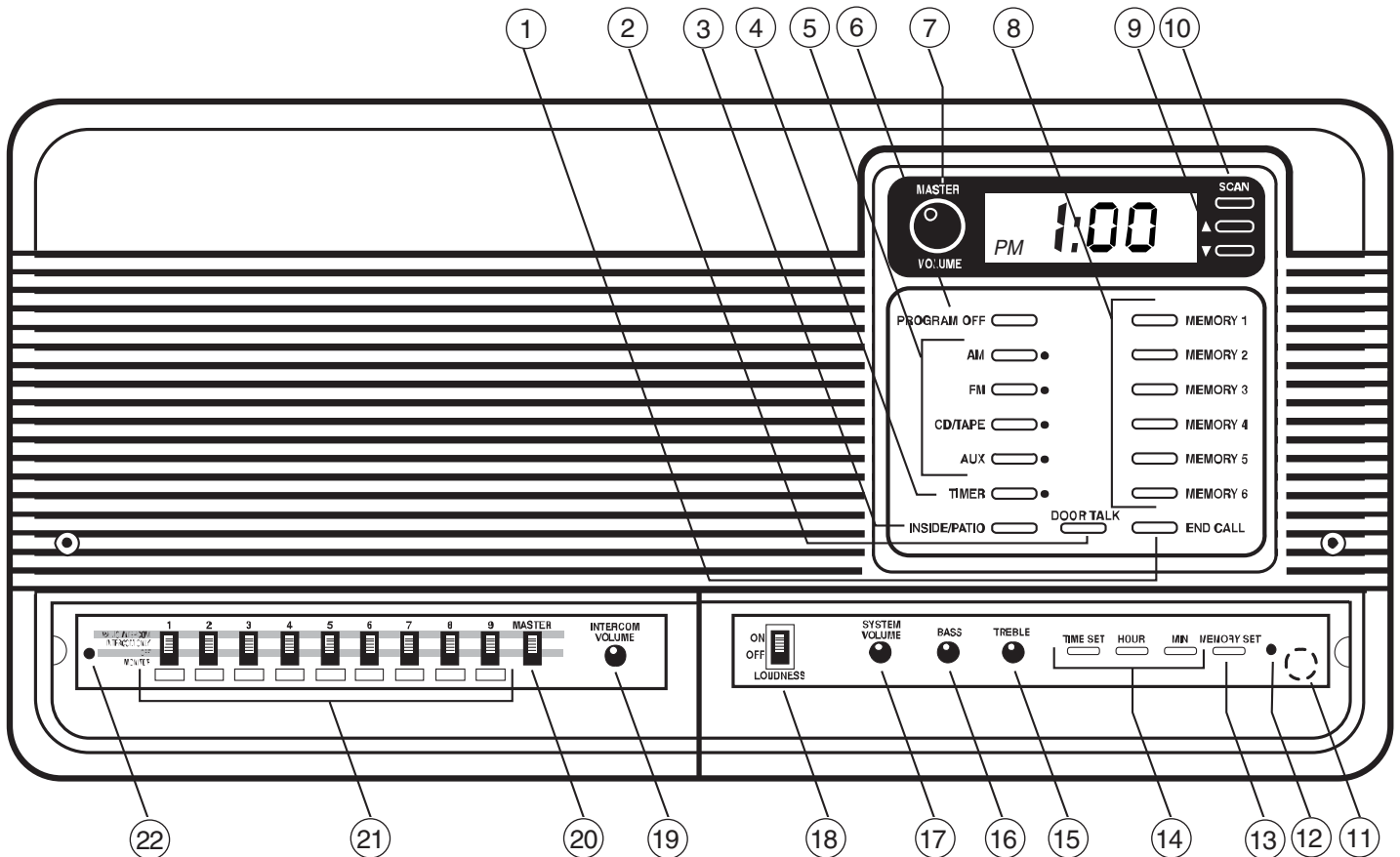


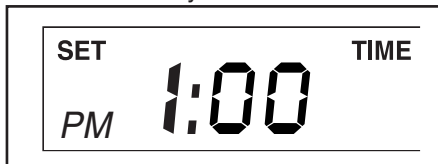
FIGURE 20

SYSTEM OPERATING CONTROLS

Digital Clock

SETTING THE TIME

1. Press the **TIME SET** key one time. The display will begin flashing, and the words **SET TIME** will be displayed.
2. Within 5 seconds, press the **HOUR** key to advance the hours. Use the **HOUR** key to select AM/PM by advancing past 12:00 on the display.
3. Within 5 seconds, press the **MIN** key to advance the minutes.
4. After entering the correct time, release the key. The display will stop flashing after 5 seconds, and the time will be set.



Operational Checkout

If the Radio-Intercom does not operate according to the following instructions, refer to the Installer's Troubleshooting Guide.

1. Set STATION STATUS SWITCHES to the **RADIO/INTERCOM** position.
2. Set the **MASTER VOLUME** control to maximum.
3. Set each individual station **VOLUME** control to maximum.
4. Set the **SYSTEM VOLUME** control to $\frac{1}{2}$ position.
5. Set the **INTERCOM VOLUME** to $\frac{3}{4}$ position.
6. Set the **BASS** and **TREBLE** controls to the $\frac{1}{2}$ position.
7. Tune in a strong FM radio station as follows:
 - A. Press the FM key
 - B. Use the **▲ ▼** keys to locate a strong FM radio station.

Beginning with the master station, check each station in the system for proper operation using the following procedure:

1. Adjust the station's Volume Control (Master Volume on the master station) between maximum and minimum, making sure the audio is completely muted in the minimum position and no noise is created by the volume control during adjustment.
2. Press the **INSIDE/PATIO** key. Radio audio will mute and audio from the station will be heard at all stations in the system, except the door speaker(s).
3. Release the **INSIDE/PATIO** key to hear the reply.
NOTE: To reply to an intercom call initiated at a remote station, the Inside/Patio key must be pressed at the station responding to the intercom call. If, however, an intercom call is initiated at the master station, the Inside/Patio key does not need to be pressed at the station responding to the intercom call. Audio from the responding stations and all stations in the system will be heard at the master station when the **INSIDE/PATIO** key is released.
4. Press the **END CALL** key. Intercom communication will end, and radio audio will return to all stations in the system.
5. Press the **DOOR TALK** key. Radio audio will mute, and audio from the station will be heard at the door speaker(s) and all stations in the system.

6. Release the **DOOR TALK** key. Audio from the door speakers will be heard at all stations in the system.
7. Press and hold the **END CALL** key. Door communication will end, and radio audio will return to all stations in the system.
8. Press and hold the **END CALL** key for 2 seconds. The radio will turn off.
9. Press and hold the **END CALL** key for 2 seconds. The radio will turn on. See page 5 for information on controlling the radio from a remote station.
10. Repeat procedure at next station.

Setting System Volume

The volume levels required at each Station may vary with the locations of the speaker and the size of the room where the speaker is located. Spend some time experimenting with volume levels, and adjust each speaker so that you can clearly hear the radio and intercom. Use the following procedures to set your system's volume levels:

1. At each remote station, turn the volume control completely clockwise to maximum volume.
2. At the master station, set the REMOTE and MASTER SPEAKER STATUS switches to the **RADIO INTERCOM** position.
3. Turn the **MASTER VOLUME** control to maximum volume.
4. Turn the **SYSTEM VOLUME** control on the master station to approximately one-third volume.
5. Select an AM or FM radio station with a strong, clear signal.
6. Adjust the master station's **SYSTEM VOLUME** control until you have enough volume at the remote station that requires the highest volume (i.e. a large living room, family room, basement, etc.).
NOTE: The Master Station and all Remote Stations (except the door speakers) are equipped with their own volume controls. Although the Master Station SYSTEM VOLUME sets the System's Volume level, you may adjust an individual speaker's volume level as desired.
7. Adjust the **MASTER VOLUME** control and all remote stations' **VOLUME** controls to the volume level you desire. Do not set the remote stations' volume controls below $\frac{1}{2}$ volume.

Setting Intercom Volume

1. Initiate Intercom call from the master station by pressing the **INSIDE PATIO** key.
2. Speak with a normal voice about 2-3 feet from the station speaker.
3. Adjust the **INTERCOM VOLUME** control until the initiating station's audio is clearly heard at all stations in the system.
NOTE: The volume control at all stations should be set between $\frac{1}{2}$ to maximum volume for proper intercom operation.
4. Repeat the above procedure at several locations until an acceptable intercom audio level is achieved at all stations.

OPERATIONAL CHECKOUT

Diagnostic Tests

The following diagnostic test have been incorporated into the NuTone IMA-3303 Radio Intercom to assist in system troubleshooting.

1. Master station keyboard test
2. Control line voltage test
3. Display test

The following applies to all three diagnostic tests:

1. To access any of the diagnostic tests, the system must be in the quiescent state (radio off and intercom in the standby mode).
2. Pressing the MEMORY SET key will end the current diagnostic test.
3. The current diagnostic test will end after one minute of inactivity.

NOTE: An incorrect control line voltage caused by miswiring or a defective remote station may prevent the unit from entering the diagnostic mode. This condition, however, can be circumvented by first placing all station selector switches into the OFF mode and then disconnecting CN701 from the terminal board. The voltage on the control line can then be measured by activating the control line voltage test mode and then reconnecting CN701.

1. **MASTER STATION'S KEYBOARD TEST** – Verifies that all keys on the master station are functioning properly.

To Activate: Press and HOLD

1. ▲ key
2. ▼ key
3. MEMORY 1 key.

In this mode the hours in the display represent the current diagnostic test and the minutes indicate the current key being pressed. The following will be displayed as each key is pressed.

KEY	DISPLAY
No key pressed	1:00
SCAN	1:01
▲	1:02
▼	1:03
PROGRAM OFF	1:04
AM	1:05
FM	1:06
CD/TAPE	1:07
AUX	1:08
TIMER	1:09
INSIDE/PATIO	1:10
DOOR TALK	1:11
END CALL	1:12
MEMORY 1	1:13
MEMORY 2	1:14
MEMORY3	1:15
MEMORY 4	1:16
MEMORY 5	1:17
MEMORY 6	1:18
TIME SET	1:19
HOUR	1:20
MIN	1:21
MEMORY SET	1:22

2. **CONTROL LINE VOLTAGE TEST** – Displays the voltage on the control line.

To activate: Press and HOLD

1. ▲ key
2. ▼ key
3. MEMORY 2 key.

Example:

DISPLAY	VOLTAGE ON CONTROL LINE
2:34	3.4 volts
2:17	1.7 volts
2:06	.6 volts

In this mode, the hours represent the diagnostic test, and the minutes indicate the voltage on the control line.

MODE	VOLTAGE WINDOW	
	MAX	MIN
End Call	4.5V	2.4V
Door Talk	2.4V	1V
Inside/Patio	1.0V	0

The control line voltage windows for the three intercom modes are listed above. For proper intercom operation, the control voltage produced when an intercom key is pressed at a remote station should fall between the voltages indicated.

NOTE: Pressing **END CALL**, **DOOR TALK** or **INSIDE/PATIO** keys at the master station will not change the voltage on the control line.

If a remote station does not produce a voltage within the above windows for a specific intercom function, check the following:

- Make sure all connectors from the master station are properly installed into the terminal PC board.
- Check IWA-3 connections at the terminal PC board and at each remote station.
- Confirm that the suspect remote speaker station functions properly by replacing it with a known good Remote Station.

3. **DISPLAY TEST** – Displays all of the segments in the display.

To Activate: Press and HOLD

1. ▲ key
2. ▼ key
3. MEMORY 3 key

Pressing the ▲ key toggles the display on and off.

INSTALLER'S TROUBLESHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
No radio, no intercom. (No Display).	No electrical power.	Be certain 120VAC, 60Hz power has been provided to the primaries of both 301T Transformers. No less than 16VAC should be measured on the secondary of either Transformer.
	Defective transformer.	Replace transformer.
No radio, intercom working. (AM/FM indicator on.)	Faulty Master Station.	Isolate Master Station from installation by removing ribbon cables from terminal board and wait one minute for timeout. With power on, radio should be playing at Master. If no radio, Master is probably faulty. If radio plays, reconnect ribbon cables.
	Installation problem.	Check terminal board for shorted terminals or miswired cables. Remove one 3-wire cable at a time to locate faulty line. When radio comes on, check speaker connections and run continuity check of speaker wiring.
	Antenna problem.	Check for shorted antenna connection. Remove antenna connector from tuner board and touch each pin with metallic object. If radio plays, antenna is not functioning; be sure it is installed properly. In weak signal areas, an outside antenna may be necessary. Also see Connecting Auxiliary AM Antenna
Low or distorted radio volume.	Incorrect volume setting.	Follow "Setting Volume" instructions under OPERATIONAL CHECKOUT.
Low or no intercom volume from remote speaker in MONITOR mode.	Improper operation.	Be sure remote speaker set for MONITOR has its volume control set between ½ and max, and receiving speakers have volume controls set between ½ and max. Follow "SETTING VOLUME" instructions in Operation Checkout.
	Program and Intercom Volume Control adjustment.	Follow these instructions whenever the radio tends to overpower transmissions from a remote speaker in the MONITOR mode. These instructions will help you get the proper balance between the radio and the monitored speaker. 1. Set system volume control to midpoint. 2. Set master to CD/TAPE or AUX position. 3. Adjust volume control for each remote station and speaker in master station ¾ position. 4. Set master to AM or FM and tune to a strong AM or FM station. 5. Adjust program volume control for a desired listening level. 6. Increase Intercom volume control setting. Adjust clockwise to desired monitor volume.
System squeals when using intercom.	Shorted wire on master or remote terminal board.	Check for short between terminals or loose wire.
	Two or more Remote Stations on same wire run to Master.	Make separate cable (IWA-3) runs from each Remote Station to the Master.
	Speakers in adjacent rooms mounted on common wall, or mounted back to back.	If speakers are mounted directly back to back, one speaker will have to be relocated. If speakers are in a common wall, try placing fiberglass insulation behind each speaker, or isolate the speakers from the wall by placing rubber washers or weather stripping between speaker and wall.
	Improper wire used in installation.	NuTone Model IWA-3-conductor, flat-ribbon cable must be used.
	Improper double connections of Remote Stations on terminal screws 1, 2, 6 & 7.	Follow "Connecting the Remote Speaker Wiring" under INSTALLATION.

INSTALLER'S TROUBLESHOOTING GUIDE

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Hum in speakers.	Intercom wiring run too close to household AC power wiring.	Keep intercom wiring as far as practical from household AC power wiring. Do not run intercom wiring parallel to AC power wiring.
	Shorted intercom power wiring or power wiring shorted to ground.	Check power connections to Master and connections to transformers.
	Interference from household electrical fixtures.	A dimmer may cause interference. For dimmer and fluorescent lighting interference, use filters (G.E. 89G635 or equivalent; NuTone Part No.: 1559A-000).
Static.	Loose ground connection.	Check ground connection to Master and connection to earth ground source.
	Interference from household electrical fixtures.	A dimmer may cause interference. For dimmer and fluorescent lighting interference, use filters (G.E. 89G635 or equivalent; NuTone Part No.: 1559A-000).
	Interference from household electrical appliances.	Correct interference at the source: fish tank, heater, hand tool, coffee pot, etc.
Remote Station not working.	Wire installation.	Check terminal board for broken wire or loose connection. Check continuity of wire.
	Speaker.	Check continuity of speaker. Clean switch controls. Substitute with speaker known to be in working order.
No door communication.	Wire installation.	Check continuity of wiring. Check connections at speaker and Master.
	Speaker.	Check with a speaker known to be in working order.
Optional Electronic Chime (Models IA-28 or IA-29) does not operate or operates at a low level.	Wire installation.	Be certain the chime is properly connected to the master station. Also, be certain the front, side and rear buttons are properly connected to the chime board.
	Improper volume setting.	Adjust the volume of the chime module by turning the volume potentiometer located on the chime module. NOTE: Chime Audio will NOT be heard at stations selected to the OFF or MONITOR.
Electronic chime can't be heard through the master station or remote speakers.	Wire installation.	Be certain the electronic chime is properly connected to the master station's electronic chime input screw terminals.
	Improper volume setting.	Adjust the volume of the electronic chime by turning volume potentiometer located on the chime.
Cannot receive radio station which is received by another radio in home.	Faulty antenna connection.	Antenna should be located in attic and connected to tuner in Master. Check antenna connector to be sure it is connected to header on tuner board.

NuTone®

Two Year Limited Warranty

WARRANTY OWNER: NuTone warrants to the original consumer purchaser of its products that such products will be free from defects in materials or workmanship for a period of two (2) years from the date of original purchase. **THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

During this two year period, NuTone will, at its option, repair or replace, without charge, any product or part which is found to be defective under normal use and service. THIS WARRANTY DOES NOT EXTEND TO FLUORESCENT LAMP STARTERS OR TUBES, FILTERS, DUCT, ROOF CAPS, WALL CAPS AND OTHER ACCESSORIES FOR DUCTING. This warranty does not cover (a) normal maintenance and service or (b) any products or parts which have been subject to misuse, negligence, accident, improper maintenance or repair (other than by NuTone), faulty installation or installation contrary to recommended installation instructions.

The duration of any implied warranty is limited to the one year period as specified for the express warranty. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

NUTONE'S OBLIGATION TO REPAIR OR REPLACE, AT NUTONE'S OPTION, SHALL BE THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY. NUTONE SHALL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH PRODUCT USE OR PERFORMANCE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. This warranty supersedes all prior warranties.

WARRANTY SERVICE: To qualify for warranty service, you must (a) notify NuTone at the address stated below or telephone 1/800-543-8687, (b) give the model number and part identification and (c) describe the nature of any defect in the product or part. At the time of requesting warranty service, you must present evidence of the original purchase date.

Date of Installation

Builder or Installer

Model No. and Product Description

IF YOU NEED ASSISTANCE OR SERVICE:

For the location of your nearest NuTone Independent Authorized Service Center:

Residents of the contiguous United States Dial Free 1-800-543-8687

Please be prepared to provide:

Product model number • Date and Proof of purchase • The nature of the difficulty

Residents of Alaska or Hawaii should write to: NuTone Inc. Attn: Department of National Field Service, 4820 Red Bank Road, Cincinnati Ohio 45227-1599.

Residents of Canada should write to: Broan-NuTone Canada, 1140 Tristar Drive, Mississauga, Ontario, Canada L5T 1H9.

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